the words of Dr. Isenkrahe [translation]: "One is beginning to recognise that physics has been quietly sleeping for two centuries upon [in the words of Newton] 'a great absurdity,' for which no one less than Newton can be made responsible" [page 125].

S. TOLVER PRESTON

THE NATURAL HISTORY OF THE TRANSIT OF VENUS EXPEDITION[1]

IN 1870 one of our correspondents called attention[2] to the favourable opportunity that would then shortly present itself for the exploration of some very little known parts of the earth's surface. Some of the positions selected by our astronomers for the observation of the Transit of Venus of 1874 were in little known islands of the Pacific and Indian Oceans, and it was pointed out that the addition to the astronomers' staff of a small corps of naturalists would not materially increase the expenditure, and would possibly lead to very interesting scientific results.

The same subject was brought before the notice of the British Association at their Meeting in 1871 by Mr. Sclater,[3] who likewise suggested that so good a chance of adding to our knowledge of the natural history of some of the least known parts of the world should not be thrown away, and urged that Naturalists should be appointed to at least three of the stations to be occupied by the astronomers, namely Kerguelen Island, Rodriguez and the Sandwich Islands.

Subsequently the same idea was taken up by the Council of the Royal Society, who resolved to request the Treasury to attach naturalists to the expeditions destined for the two first above-named localities—"two of the least explored and most inaccessible islands in the southern hemisphere"—and appointed a committee consisting of Sir Joseph Hooker, Prof. Huxley, and Mr. Sclater. to prepare the necessary application to the Government for this purpose. We need not now repeat the arguments which these gentlemen brought before Her Majesty's chief advisers—it is enough to say that they were of a sufficiently cogent character to obtain the sanction of the Treasury to the appointment of four naturalists for the purposes required; three for Rodriguez and one for Kerguelen's Land.

The gentlemen selected for the work by the Council of the Royal Society were for Rodriguez, Mr. George Gulliver, Dr. I. B. Balfour, and Mr. H. H. Slater, and for Kerguelen's Land the Rev. A. E. Eaton. Mr. Gulliver was directed to investigate the fauna of Rodriguez generally, Dr. Balfour was charged with the duties of botanist and geologist, and Mr. Slater was set to dig out the caves of the same island, and to collect the fossil remains of extinct birds known to be imbedded in them. Mr. Eaton was thought to be specially qualified to investigate the fauna and flora of Kerguelen's Land, as having been previously naturalist to one of the Arctic expeditions.

The collections and observations made by these naturalists fulfilled, as we are informed, the expectations of the Council. The results of them are given in the present work, which is issued as an extra volume (No. 168) of the *Philosophical Transactions*.

The plan upon which the collections were worked out, and which is in fact the only plan upon which a mass of heterogeneous materials can be properly worked out now-a-days, is an admirable one. The different objects were assigned for examination to experts in different branches of science, each of whom has prepared his own report on what was submitted to him. These reports, prefaced by a few introductory remarks, and illustrated by notes of the collectors, constitute the volume now before us. It is divided into two sections, the first relating to Kerguelen, and the second to Rodriguez.

After a chapter by Mr. Eaton on the physical features of Kerguelen, and on the previous visits to it by naturalists, we find a series of essays on the botany by Sir J. Hooker, Mr. Mitten, the Rev. J. M. Crombie, Dr. Dickie, and other well-known authorities. Then follows a similar series of memoirs upon the zoology of the same island.

The zoological and botanical collections made in Rodriguez are next treated of in the same way, and we have here also a valuable memoir on the petrology of Rodriguez by Mr. N. S. Maskelyne. From the last-named essay it turns out that the notion that this island consists of "granite overlaid with limestone, and other recent rocks," which was entertained by the Committee of the Royal Society, misled by previous inaccurate obsêrvations, is altogether erroneous. Mr. Maskelyne tells us that "the numerous specimens illustrating the rock formations of the Isle of Rodriguez, collected by Mr. I. Bayley Balfour from different localities, need only a cursory inspection to attest the volcanic character of the whole mass of the island.

"Rodriguez, in fact, consists of doleritic lavas that appear to have been poured out at a considerable number of volcanic orifices at successive periods. It would be difficult, without more minute description of the physical geography of the island than is accessible, to assign any precise date of duration to these volcanic eruptions, or to trace with any certainty the degree to which, and the mode in which, subsequent denudation has helped in giving the island its present remarkable aspect.

"But the fact of that denudation and the degree to which alteration has proceeded in affecting the minerals composing rocks that by their position must have been among the later of the out-poured lavas, would point to a remote date, possibly to one contemporary with the tertiary period, as that of the volcanic activity of Rodriguez."

We have not space here to go separately into the numerous essays that compose this work. For many of them, the name of the author is quite sufficient to assure us of their excellence, some of the most accomplished naturalists of the present epoch having contributed to the volume. But it is quite evident that a thoroughly good and satisfactory piece of scientific work has been thus accomplished at a very small cost, and that the council of the Royal Society, who planned the whole scheme and carried it out, and especially those two members of it (Sir J. Hooker and Dr. Günther), who have so efficiently edited this account of the results attained, are entitled to the warmest thanks of all naturalists. Several other nations sent out expeditions to observe the Transit of 1874, and likewise had naturalists attached to their staffs, who have published some valuable observations. But nothing like the handsome and solid volume now before us, with its fifty-five admirably executed lithographic plates, has been produced on this occasion in France, Germany, or America. There are certainly some advantages in having a Royal Society at the head of Science instead of a Royal Academy!

Having said this much, we will venture on two small criticisms:—First, it is a great pity that there are no *maps* given in the volume now before us. Without reference to maps it is not possible to appreciate the significance of many of the observations made by the naturalists, and as no generally available atlas contains charts of such obscure islets as Rodriguez and Kerguelen, maps ought to have been attached to the work itself. In fact, every zoo-geographical memoir now-a-days ought to be illustrated by a map.

---

[1] "An Account of the Petrological, Botanical, and Zoological Collections made in Kerguelen's Land and Rodriguez during the Transit of Venus Expeditions, carried out by Order of Her Majesty's Government in the Years 1874-75." *Philosophical Transactions* of the Royal Society of London, vol. clxviii. Extra volume, 1879.

[2] See article on the Transits of Venus in 1874 and 1882. NATURE, vol. i., p. 526.

[3] See "Remarks on a Favourable Occasion for the Establishment of Zoological Observatories." By P. L. Sclater, M.A., Ph.D., F.R.S. Rep. Brit. Ass., 1871, pt. ii., p. 134.

© 1880 Nature Publishing Group

Secondly, it is unfortunate that naturalists were not likewise sent to Oahu, in the Sandwich Islands, where there was likewise an astronomical station in 1874. The Sandwich Islands, as was pointed out by our correspondent in 1870, are the seat of a most peculiar indigenous flora and fauna, which is now fast perishing beneath the assaults of European weeds and animals introduced from other countries. Dr. Finsch, who was lately at Honolulu on his way to the Northern Pacific, tells us (*Ibis*, 1880, p. 79) that during a week's stay in that city and its vicinity, he saw *no birds* except introduced species, and had to go far into the interior to obtain examples of the indigenous Avi-fauna, and that the "native forests are going in the same way." It is a great misfortune, then, that this should happen before we have any good account of this peculiar flora and fauna which rivals in eccentricity even that of the Galepagos. And as another Transit occurs in 1882, we trust that should our astronomers again visit any one of the Sandwich Islands group, a staff of efficient naturalists will be sent in their company.

ARTIFICIAL DIAMONDS

UNDER the heading of "The Crystallisation of Carbon" Mr. Crookes writes as follows in the last number of the *Chemical News*:—

Since sending the telegram[1] announcing that carbon crystals, apparently diamond, could without difficulty be produced from any carbon compound, Mr. Mactear has sent me several specimens of his supposed artificial diamond. He has also called upon me with other specimens, and has explained the whole process by which he obtains such remarkable results. As, however, he has sent to the Royal Society a paper which will probably be read in the course of a week or two, I am not yet at liberty to give details of the process.

The general character of the specimens now in my possession may be described as irregularly shaped masses from 1 mm. downwards in diameter, with rounded angles, and showing no definite crystalline appearance. They are whitish looking, translucent, and as a rule lustreless; many pieces are almost spherical and appear like fragments of corundum which have been water worn. Amongst these are perfectly clear fragments larger in size, some being 3 or 4 mm. across, having a conchoidal fracture exactly like glass.

In a paper "On Molecular Physics in High Vacua," read before the Royal Society in March last, and now being published in the *Philosophical Transactions*, I referred to the remarkable power possessed by the molecular rays in a high vacuum of causing phosphorescence in bodies on which they fall, and I remarked that the only body which surpassed Becquerel's luminous sulphides both in brilliancy and variety of colour is the diamond. Most of these gems, whether cut or in the rough, when coming from the South African fields, phosphoresce of a brilliant light blue colour. Diamonds from Brazil shine with different colours, such as bright blue, pale blue, apricot, red, yellowish green, orange, and light green. A beautiful collection of diamond crystals, kindly lent me by Prof. Maskelyne, phosphoresced with nearly all the colours of the rainbow, the different faces glowing with different shades of colour. On receiving the specimens from Mr. Mactear, I immediately submitted them to the molecular discharge. The following are the results I have at present obtained :—

In a high vacuum the specimens phosphoresce brightly of different colours—pale blue, orange, apricot, and yellowish green. The clear glassy fragments are also phosphorescent. The appearance of the phosphorescence is very similar to that shown by small, rough diamonds from Brazil, called in the trade "Boart;" indeed, had I not known the history of the fragments in my tube, I should, from their appearance, have said that they were small fragments of Brazilian Boart.

The opaque rounded appearance of the fragments is unlike that of the natural diamond, but by heating a rough diamond before the blowpipe until it has partly burnt away, it assumes a very similar appearance to that of Mr. Mactear's crystals, and it is therefore not unlikely, from their mode of preparation, that these crystals have undergone partial combustion after their formation—a fact which would explain this difference in appearance. Other specimens having been placed by Mr. Mactear in competent hands, with a view of determining their hardness and chemical properties, I have refrained from making experiments in this direction. W. C.

We append a letter on the subject from Prof. Maskelyne in the *Times* of the 8th inst. :—

As I know that a portion of the public is very much interested in the diamond question, and in the result of the interview Mr. Mactear announced that he and I were to have in connection with it, I think, perhaps, it will be well to say that I have had the pleasure of working with that gentleman many hours yesterday and to-day, and that our results so far convince me that, while my own conclusions, as announced in the *Times*, are borne out as regards at least the portion of the substances on which I worked, there are other portions of those substances that differ from these in properties and still require investigation; that, in fact, the material is a mixture of different bodies. When I say that I have as yet no evidence of the existence of crystalline carbon, whether as diamonds or in some other condition, among these bodies, I feel that Mr. Mactear makes a reasonable request of me in asking that I should invite a suspension of opinion regarding a discovery he believes that he has made. A portion of the material he has produced is very hard, and, I believe, bears out his claim to have scratched topaz and sapphire. Mr. Mactear wishes me to add that the diamond has been also abraded by his product and to inclose to you a certificate to that effect. Mr. Mactear wishes me also to state that he claims simply to have produced a crystalline form of carbon irrespective of the question of whether this is the diamond.

I am, Sir, your obedient servant,
NEVIL STORY-MASKELYNE
British Museum, January 7

We may state that in the *Times* of the same date is a certificate from Mr. L. Boston, of Glasgow, that he has been able "to scratch a diamond and to engrave two rubies, two sapphires, an amethyst, and a cairngorm" with Mr. Mactear's "crystallised carbon sand."

THE "TIMES" ON BRITISH BIRDS

NATURALISTS live a life of surprises, but the surprise with which ornithologists must have one day last week received certain positive assurances of the leading journal would surely overstep the bounds of ordinary astonishment. We have, no doubt, been passing through a "silly season" of unwonted severity, as the morris-dance of late performed by many of the pseudo-ornithological correspondents of the *Times* proves; but a recent leading article in that journal eclipses all else that it has published on the subject.

After declaring that "our birds are the glory of the land," and piously ascribing that glory to the upper regions, the writer goes on to compare England with France in the matter of its birds, saying, of course, nothing that was not quite well known before, except the extraordinary statement that "France has produced ornithologists, but they have had to leave her shores." The meaning of this is entirely beyond us, for every one knows who cares to know that France now possesses a large number of ornithologists—and one indeed, M.

---

[1] *Chemical News*, vol. xl. p. 306 (December 26, 1879).

© 1880 Nature Publishing Group